Amendments to the Specification

Please replace paragraph No. [0004], with the following amended paragraph:

[0004] 1) One of them is a relationship between a Signal/Noise (S/N) ratio and an operation range. In other words, in principle, the SQUID can be used to design a driving circuit having a large S/N ratio such that the operation range can be ~~widen~~ wider, but since the sensitivity of the SQUID is degraded in a real circumstance due to influences of geomagnetic field generated in a general circumstance or magnetic field of a magnetic source, the S/N ratio is not increased as much as the operation range is increased. This is because the intensity of the geomagnetic field in the general circumstance is several tens of $\mu T / Hz^{1/2}$, and the intensity of the geomagnetic field is only several $mT / Hz^{1/2}$ according to a distance from a power supply or a distance from the magnetic source such as an electro-magnetic equipment, a car, etc.

Please replace paragraph No. [0008], with the following amended paragraph:

[0008] 3) A conventional SQUID has a drawback in that since the SQUID has a different operation current in every device, the SQUID frequently shows a minute variation depending on a magnetic shield condition while a cooling process is performed using the refrigerator. That is, in appliance in the general circumstance using the refrigerator, even in the magnetic shield condition, since the magnetic field is rapidly varied at the time of initial cooling and resetting to degrade the sensitivity of the SQUID, the conventional SQUID has a drawback in that the self-noise of the SQUID is increased due to degradation

of a material constituting the SQUID.

Please replace paragraph No. [0068], with the following amended paragraph:

[0068] The refrigerator 100 includes a motor unit 130 comprised of a permanent magnet and a fixed electro-magnet; a coolant 120 for moving a low temperature ~~atmospher~~ atmosphere caused by the motor unit 130; and a cold end 110 for transmitting the coolant 120 to the SQUID sensing unit 10 to maintain the low temperature. Herein, the auxiliary sensor 20 is disposed close to the motor unit 130, and the SQUID sensing unit 10 is disposed distant from the motor unit 130.

Please replace paragraph No. [0080], with the following amended paragraph:

[0080] To the contrary, in the inventive method, the sensor reading unit 300 corresponding to the auxiliary sensor 20 in FIG. 5 reads out a signal of the auxiliary sensor 20 having a ~~large~~ larger magnetic field generated at the motor unit 130 than from the SQUID sensing unit 10. Additionally, the read signal is used to form the offset magnetic field at the SQUID sensing unit 10. Through a linearizer, a more attenuated signal than the signal read out by the auxiliary sensor 20 is outputted. Accordingly, the more attenuated noise than the self-noise of the auxiliary sensor 20 is applied to the SQUID sensing unit 10.

Please replace paragraph No. [0081], with the following amended paragraph:

[0068] Preferably, the positions of the SQUID sensing unit 10 and the auxiliary sensor 20 are determined such that the magnetic field strength at the motor unit 130 is one thousand times that at the SQUID sensing unit 10. At this time, assuming the self-noise $100pT/Hz^{1/2}$ of the auxiliary sensor at the present technology level of a self-resistance sensor, the offset magnetic field having the noise of $100fT/Hz^{1/2}$ at the present technology level of a high temperature superconducting SQUID is the same as a result obtained by applying the offset magnetic field.